BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Subsidiary Diploma in Applied Science Pearson BTEC International Level 3 Foundation Diploma in Applied Science Pearson BTEC International Level 3 Diploma in Applied Science Pearson BTEC International Level 3 Diploma in Biomedical Science Pearson BTEC International Level 3 Extended Diploma in Applied Science Pearson BTEC International Level 3 Extended Diploma in Biomedical Science Pearson BTEC International Level 3 Extended Diploma in Environmental Science
Unit number and title	**Unit 13: Biological Molecules and Metabolic Pathways**
Learning aim(s) (For NQF only)	**B:** Explore the effect of activity on respiration in humans and factors that can affect respiratory pathways
Assignment title	**Respiration in Humans**
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are working as a research assistant in the School of Sport, Exercise and Health Sciences at the local university. Your supervisor has asked you to produce a portfolio of work for the university's open day. This will cover respiratory pathways, how activity and various factors affects respiration and respiratory pathway in humans. You will need to include evidence of an investigation you have carried out into the effect of activity on respiration in humans.
Task	Produce a portfolio (report, leaflet, practical investigation write up) **evaluating**, **analysing** and **explaining** the respiratory pathways, the effects of activity on respiration in humans and the effects of factors on respiration and the human respiratory pathways. Always use correct and accurate scientific terminology. Your portfolio should include: • A leaflet, including labelled diagrams, to **explain** the stages involved in respiration (glycolysis, link reaction, Krebs cycle and electron transport chain.) Include an **explanation** of**:** o Why each stage is important in the human respiratory pathway o How the chemical stages in the human respiratory pathway are related o Why the amount of energy released at each stage

	is significant • A practical investigation into the effects of activity on respiration o Competently and safely **carry out an investigation** into the effects of activity in relation to one of the following: o carbon dioxide output (eg using a Douglas bag), o lactic acid levels in the blood (eg using simple blood testing kits) Provide outline details of your method, including any changes made to any method provided for you, and any repeated practical work you carried out to eliminate errors and check the validity of the data. (This can be excerpts from your lab notebook.) Identify anomalies and if possible explain them. Your competency skills will need to be validated by an observation sheet completed by your tutor/assessor. **The practical work needs to be risk assessed before it is carried out.** Present your results (primary data) from your investigations and **analyse** it to form valid and detailed conclusions to explain the effects of activity on respiration. Access additional information from referenced secondary sources. (This can be from your peers and/or text books or internet sources.) Relate this to the primary data you have collected and interpret and identify key trends and interrelationships in the data. Link changes in respiration rates to the type of activity undertaken. • A report to **describe**, **explain** and **evaluate** how various harmful factors that can affect human respiration and the respiratory pathways: o Use research you have carried out to **describe** how the following factors affect respiration: o Chemicals in cigarettes (toxins, tar, nicotine) o Drugs, (ketamine, cocaine) o Pollutants (asbestos, oxidants) o Disease e.g. Asthma o For **TWO** of the factors you must **explain** in detail the disruption they cause to the respiratory pathways and the effect this has on respiration. o **Evaluate** the effects that the harmful substances have on the efficiency of aerobic respiration and how this affects metabolic pathways. Use the primary and secondary data you have collected to evaluate your conclusions into the effects the factors have. o References must be cited using a standard protocol, such as the Harvard system.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
B.D2	Evaluate the effects of harmful substances on the efficiency of respiration.
B.M3	Explain the harmful effects of factors on respiration.
B.M2	Analyse primary and secondary data to explain the effect of activity on respiration.
B.P4	Describe factors that can affect respiration.
B.P3	Carry out an investigation involving the effect of activity on respiration in humans
B.P2	Explain the stages involved in the human respiratory pathway
Checklist of evidence required	A detailed presentation and leaflet to include: • An evaluative report including a description and explanation of the harmful effects of substances on respiration and the efficiency of the respiratory pathways • Evidence that you have competently carried out an investigation into the effect of activity on respiration. observation sheet, log book, write up and results) • An analysis of primary and secondary data on the effect of activity on respiration • A leaflet explaining the stages involved in the human respiratory pathway
Sources of information to support you with this Assignment	All sources of information suggested are UK based. Centres are free to amend these sources to those available in the Country of delivery where more appropriate. Hartley, J. et al. *Pearson BTEC National Applied Science Student Book 1*, 2016 (ISBN; 978-1292134093) Ferrier, Denise R., *Biochemistry (Lippincott's Illustrated Reviews Series)*, 6th edition, Lippincott Williams and Wilkins, 2013 (ISBN: 978-1451187533). An illustrated book to help the learner – written expressly for advance level learners. http://chemistry.tutorvista.com/biochemistry/biological-molecules.html http://www.s-cool.co.uk/a-level/biology/biological-molecules-and-enzymes http://www.youtube.com/playlist?list=PLwBILz9eQBWOTFnPZALWOQhUBWdn5Rp22 http://www.biologymad.com/master.html?http://www.biologymad.com/biochemistry/biochemistry.htm http://revisionworld.com/a2-level-level-revision/biology-level-revision/biological-molecules

Note to assessors
It is the centre's responsibility to carry out risk assessments prior to investigations being undertaken. The practical activities suggested for this assignment are required to be safety checked

by the centre before use. Pearson Education can take no responsibility for the safety of any practical activities.
Before doing a practical activity you should always carry out your own risk assessment and refer to the necessary regulations. In particular, any local rules issued by your employer must be obeyed, regardless of what is suggested here.

Learners are not being assessed on their ability to plan a practical investigation. They are being assessed on their ability to carry out an investigation.

Access to a gym/university/college sports department to use specialist data logging equipment would be beneficial in collecting appropriate data.